Dec. 22, 1995
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COOP'S TECHNOLOGY DIGEST

-A Timely Report On The World Of Communications-

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COOP'S TECHNOLOGY DIGEST

DECEMBER 22, 1995 ◆ VOLUME 95-10-23

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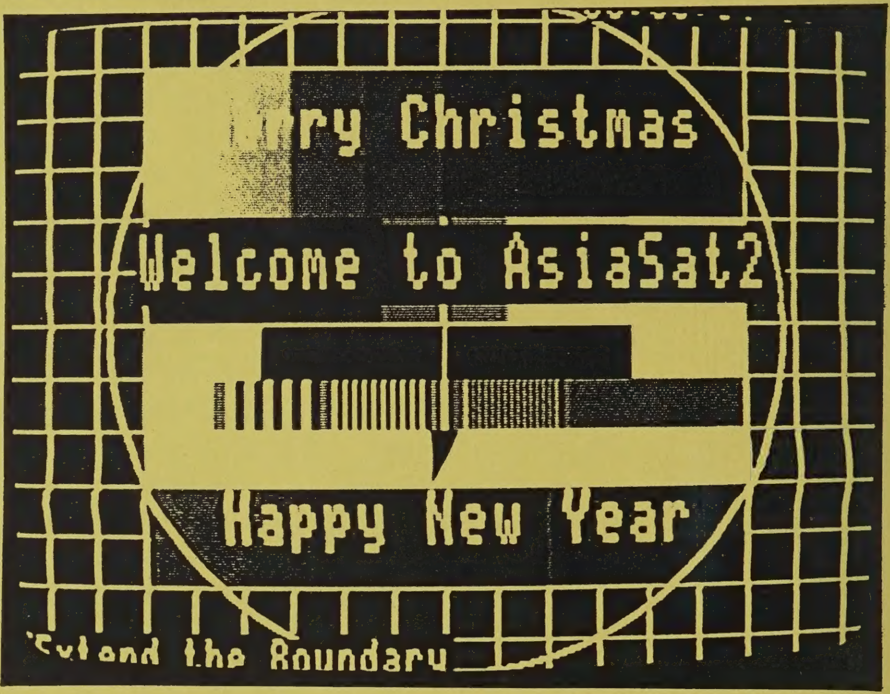
DTH ARRIVES in New Zealand

Direct to home satellite delivered television, in both free to air and pay, took a gigantic leap forward Monday afternoon, December 18th, when AsiaSat 2 turned on its first video test card. From all across New Zealand readers of our SatFACTS Monthly publication report on their results with this new satellite.



AsiaSat 2 TEST CARD as received at CTD the evening of December 18th; reports from throughout the Pacific confirm it is perhaps the strongest satellite signal ever seen in New Zealand. (We apologise for the poor reproduction - not sufficient time to have the photo properly screened before printing.)

New Zealand is located at the very fringe of coverage for AsiaSat 2; in the best case the satellite appears only 5 degrees above our western horizon, and for eastern New Zealand locations such as Hawkes Bay, the satellite is virtually flat to the earth's western surface (only 2.1 degrees above the horizon). This means that any obstacle to microwave frequency signals rising above the horizon to the west / north-west can and should block the AsiaSat 2 services from reaching a specific New Zealand location. One of our early reports came from Bay Satellite TV Limited's John Lynam (Hastings area) who found the AsiaSat 2 signal with a very modest 3m size dish which is situated such that a significant portion of its lower surface area is actually blocked by a neighbour's fence. This did not deter the signal from reaching his dish.

AsiaSat is an Asian corporation headquartered in Hong Kong with sizeable mainland Chinese investment money behind it. The satellite has the capacity to carry 28 analogue C-band signals simultaneously as well as Ku band services. Only the C-band transponders come towards New Zealand (and Australia).

The largest customer of AsiaSat is Rupert Murdoch's Star TV service. It will offer seven free to air (FTA) services as well as up to 40 pay TV services through the satellite. Within the FTA services are a 24 hour sports channel, a 24 hour world news channel, a 24 hour music video channel, and a 24 hour family entertainment channel. In the pay TV arena, it will be offering the brand new (January 15, 1996) NBC (National Broadcasting Company) "NBC Asia" service channel which will carry such NBC programming as the Today Show, Tonight with Jay Leno and a wide variety of NBC sporting events.

Additional AsiaSat 2 users include Germany's Deutsche Welle service (a 24 hour mixture of German, English and Spanish with approximately 40% of the telecast day in English), and Radio Television Portugal's 24 hour English and Portuguese service.

AsiaSat 2: Kick Off For New Zealand DTH

Tests underway as we go to press suggest strongly that dishes as small as 2m located where there are no obstacles blocking the view of the AsiaSat 2 signals will work for DTH viewers. This means consumers fortunate to live where an unobstructed western view is available will be able to slide into a home dish system for as little as NZ$3,000, installed. Distributors such as Bay Satellite are proclaiming this to be "*the launch of the home DTH business in New Zealand.*" In fact, the real launch will follow in March when an equally strong (actually, projected to be even stronger) satellite, Palapa C1, is scheduled to become operational from a more favourable location at 113E. It, like AsiaSat 2, will be loaded with FTA and a modest number of pay television programmers.

The appearance of AsiaSat 2 is timed well for the January 23-27 South Pacific Region Satellite & Cable Show where up to 500 registrants from New Zealand, Australia and throughout the Pacific - Asia region are expected to learn the latest in technology and to share experiences in the DTH and cable TV arenas (1). With more than a dozen operating home DTH satellite antennas operating, the 63 product brands on display in the SPRSCS Exhibit Hall will be in good company as dealers and system planners work their way through the largest South Pacific industry gathering in history. It is expected to be a very upbeat crowd who will for the first time be able to see and judge just how well they will be able to sell DTH service to New Zealanders based upon the FTA and pay programming of AS2 (Star TV plans to have their services operating by the middle of January, just prior to SPRSCS). Coming on top of the most recently announced new services on PAS-2, this will bring to more than 50 the total number of FTA and pay TV services which could be available to DTH or cable system users in the New Zealand region; a far cry from the fewer than 10 available only one year ago.

The AsiaSat 2 Turn On:

AsiaSat 2 was successfully launched from China's Xichang Satellite Launch Site (southern China) on November 28; within two hours the satellite had been lifted into higher orbit and all

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1/ Subscribers to the Doubtless Bay Cable TV service may have been the first "cable viewers" in the Pacific or Asia to become a part of the AsiaSat 2 family; the cable firm placed the first test video on a cable service channel less than 30 minutes after the test video was observed. The test card text carried its own subtle message, reading: "*Merry Christmas / Welcome to AsiaSat2 / Happy New Year/ Extend The Boundary.*" Indeed, the boundaries have now been extended.

telemetry signals indicated the satellite was on course to a stationary position at 100.5E. This was the first launch by the Chinese Long March 2F rocket system since the January failure of a similar launch that destroyed ApStar 2, a competitive satellite to AsiaSat.

By December 7th AS2 was in position at 100.5E and the delicate step by step process of unfurling solar panels and positioning of the various transmit and receive antennas was under way with constant telemetry observation and command from the uplink control facility. AsiaSat 2 carries on board a trio of "beacon" signal transmitters, designed to allow ground control to communicate with the satellite (sending it commands, receiving back verification of the execution of the commands) regardless of its status or location. These beacon signals were first reported on December 10th by observers equipped with spectrum analysers (normal satellite TV receivers cannot detect the beacon signals). By December 14th the beacon signals were carrying high speed data transmissions indicating that testing was underway. By midday (New Zealand time) December 14th, a number of AS2 transponders had been turned on and were being "swept tested" (a technique that tests the quality of a transponder without actually transmitting TV signals through them). There was considerable excitement as observers from Africa to New Zealand reported on reception of the test signals.

At 4PM December 18th the first video signals capable of being received by a modest home DTH system were seen (3864 MHz, IF of 1286, vertical polarisation). Within a few hours dozens, then hundreds of reports on the reception quality were pouring in to our SatFACTS publication. Nobody said they were disappointed with the strength of the test signal, most were relieved the satellite was finally in orbit (it had been originally planned for May 1995 operation) and that the test signals showed such great strength.

CTD was advised by contacts at Star TV late on the 18th that the test signal being transmitted by AsiaSat was in fact operating at a power level considerably reduced from full power (5dB below saturation) and that if the uplink operator wished to do so, a considerably stronger signal could be transmitted. In fact, some test signals (not modulated; only carriers) were observed December 16th and 17th which indicated the full power available to this satellite; easily strong enough to "play" on home DTH dishes down to 1.8m in size in New Zealand.

What's Immediately Ahead?

The holiday period we are now entering will get in the way of significant additional progress before approximately the 8th of January. Murdoch's Star TV, to use this satellite, has constructed a new 9m uplink antenna at its Hong Kong facility. Sources at Star tell CTD they have an internal date of 15 January to begin "*regular service*" through AS2, but warn that a number of certification and hardware challenges remain to be ironed out before they are ready to operate. Quite separate from the Star TV programme channels to be uplinked, AsiaSat advises they plan to begin sending programming for a number of their non-Murdoch customers to the satellite as early as the 2nd of January (or as late as the 15th). Thus once we are through the initial holiday season, new services will begin to appear on the satellite on an almost daily basis through much of January.

As improbable as it may sound, there still has been no "final" decision by Star TV concerning the question of analogue versus MPEG digital for the initial transmissions. Ultimately, Star TV will use their leased transponders for DVB compliant MPEG transmission format. DVB compliant is the latest "wrinkle" in the long list of evolutions in digital technology and it means simply this:

> *Any satellite programmer who elects DVB compliant MPEG will be able to transmit programmes to any DVB compliant receiver because each receiver will have the same MPEG processing circuits and use the same MPEG conditional access (receiver addressing) system.*

At the present time the very first DVB compliant receivers are coming off the production line at Nokia, Pace, Panasonic and Sony. They are only available in very small quantities at this time and most are being shipped into specific markets such as Australia (for the Galaxy service there) and South Africa. Star TV, as much as it would prefer to initiate first day service in DVB compliant MPEG from AsiaSat 2, is faced with the reality that it could be three months or more before there are more than a few thousand receivers in the Africa-New Zealand arc capable of receiving their DVB compliant signals. On the other hand, if they simply begin operation with traditional analogue as a statement of their "presence" on the satellite, they could be creating a false (misleading) impression that the analogue service will continue there. One possible scenario is that they will uplink their FTA analogue services on AS2 for a modest period of time (90-120 days) and begin parallel transmissions in DVB compliant MPEG almost immediately. As the receiver suppliers are able to work down the backlog in receivers now on order (Pace alone claims 1,000,000 units on back order) and receivers appear in dealer hands, the analogue service would be given a "drop dead" (turn off, for good) date.

Deutsche Welle, the German national world telecaster, is another example of dealing with this situation. DW has a full transponder on AS2 but plans to use only 25% of it themselves to deliver a 24 hour DVB compliant MPEG service to Africa, Asia and the Pacific. The remaining 75%, capable of supporting three more full motion high quality MPEG signals, is being negotiated to "*programmers with a similar philosophy to that of DW*" at this time. The DW "philosophy" is to provide a FTA service designed first to extol the virtues of Germany (as a business climate, as a tourism destination) and second to provide German citizens away from home or those who have migrated elsewhere with daily national TV service. DW carries no commercials as such. (Australia's ATVI [Australian Television International], to be available into New Zealand on Palapa C1 in March, is a similar service). DW's present programming serving Europe and Africa is to be taken off of a European satellite in Israel and re-linked to AsiaSat 2 from that location. The Israeli installation, purpose built for this relay, has been designed for DVB compliant MPEG only. Alas, if there is nobody "out here" with DVB compliant receivers, at this time, does DW hold off inaugurating their service until the receivers are here? Or, do they initiate service in analogue and then convert to MPEG at some future date? DW is not certain as we go to press; in early December they were in favour of starting in analogue but by mid-December were leaning towards delaying their start-up until June when they believe sufficient DVB compliant receivers will be available to justify there being in that format. DW will be attending the SPRSCS gathering in Auckland January 23-27th and may have an update at that time for the conferees.

The Terrestrial Noise Problem:

Our SatFACTS Monthly looks in some detail on January 15th at a technical question which will have additional influence on the success or failure of AsiaSat 2 as a "kick start" to the New Zealand DTH industry. That factor is "terrestrial noise." Without belabouring a technical point, there is a valid concern here. As satellites appear closer and closer to the observer's horizon, not only must there be careful selection of a site for the (DTH) antenna to avoid any signal blockage by trees, fences, buildings and hills, but there must also be concern that the earth itself does not "create interference" for the satellite signals. The earth is a source of "noise" or interference and as the satellite antenna is aimed just above the horizon to see the AS2 satellite, a sizeable amount of "earth noise" finds its way into the antenna. This noise corrupts the quality of the received signal(s), even though they may be very strong. As SatFACTS for January 15th explains, the antenna system builder must be extra careful in selecting his component parts (in particular, the so-called feed antenna) to minimise the degradation from this earth noise source. Early test results from observers are positive, however, telling us that even carelessly designed antenna feed systems which do not discriminate against earth noise are finding the AsiaSat 2 signals so powerful that the degradation to picture quality is relatively minor. What this could do in the newly emerging home dish industry is to force system installers to be more professional in their selection of equipment and installation techniques; the good installers will properly select equipment and install it to minimise the noise effects while the "amateurs" will do it improperly and produce noisy pictures as a result.

At least one satellite hardware supplier, Bay Satellite TV, is capitalising on this situation by offering dealers special training in the techniques required to produce clean, high quality reception from AS2. The thrust of their advertising and educational campaign now underway, as well as their SPRSCS display booth stand area, will revolve around urging home dish seller / installers to adopt more professional approaches to system sales in order to ensure the highest possible level of performance.

The Direction Ahead:

DVB compliant MPEG services have been available in the United States since June 1994. There are now 1.1 million DSS receivers in consumer hands and a sales rate in excess of 100,000 per month. Thomson, Sony, Uniden are now in the market place with receive systems (antenna, LNB, receiver and accessories) and more brands are on the way by the end of 1996. DSS was the pioneer service; it will have a pair of competitors by mid-1996: Echostar (which is scheduled to launch its first of two satellites in February) and AlphaStar as early as February.

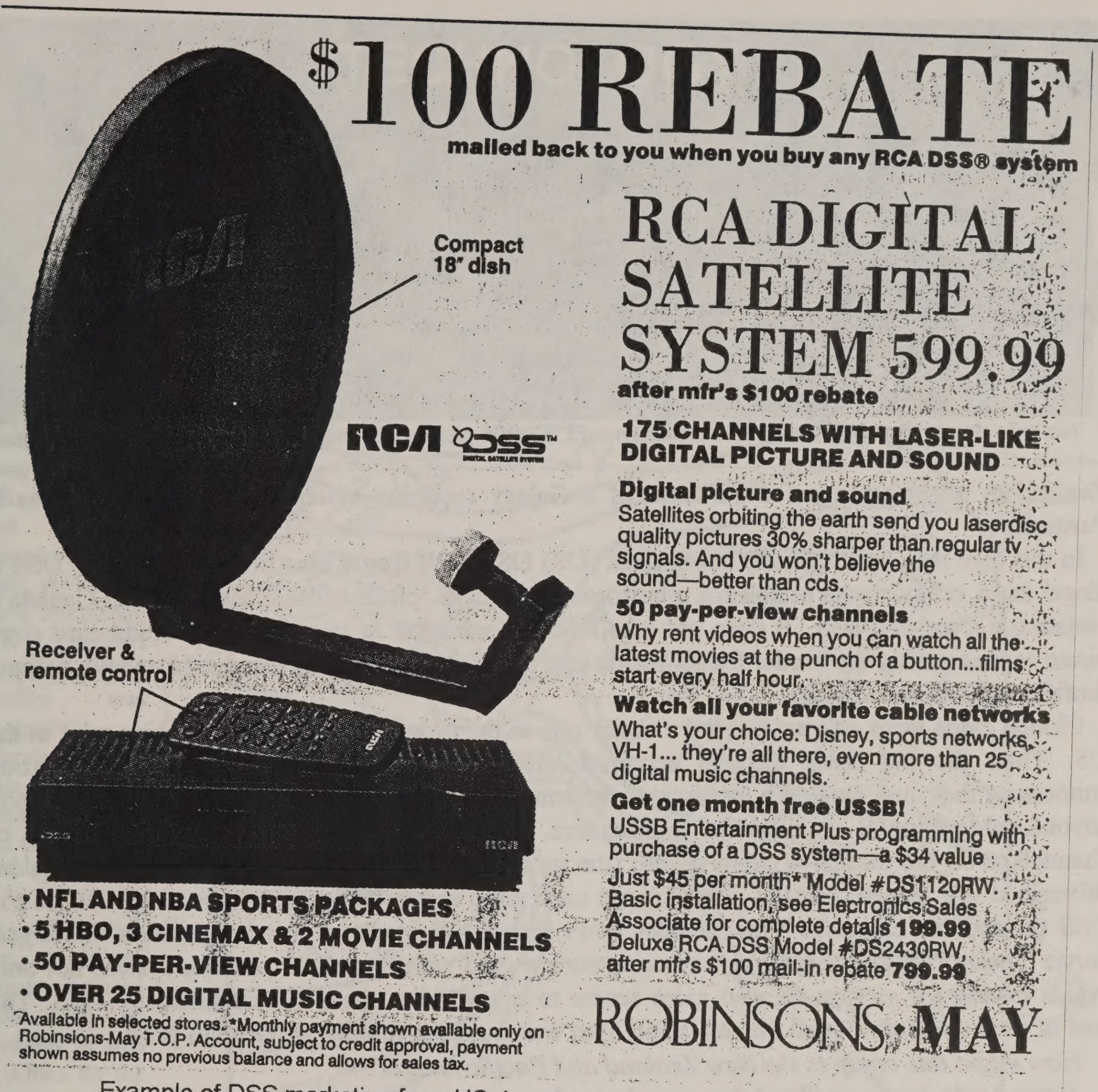
Hardware system prices began at US$800 and have dropped to under US$600. Echostar promises its particular package of hardware will retail for under US$500. The name of the game is not selling hardware, however. It is all about programming sales, not unlike the famous Kodak "Box Brownie" camera of the late 30s and 40's; Kodak was less concerned about making money on the camera, they really wanted consumers to buy their film. By making the camera inexpensive they encouraged more people to own cameras which in turn sold more film.

US pundits believe the price for complete home DSS/Echostar/Alphadstar hardware systems will drop to under US$300 within another year. At that point, the industry believes, DSS hardware will have become the "Box Brownie" of the 1990s.

SatFACTS for January 15th looks closely at the programming now being offered by programme packagers in the US and the way it is being sold. Basically, as many as 150 separate programme channels are on offer. If a home subscribed to all of these services, it would have a monthly bill of more than US$500. Most homes elect a pre-packaged group of channels (typically between 25 and 30 separate programme channels) at a monthly price in the range of US$40-50. Each programme channel is separately "addressable" to each receiver and in this manner while all 150 programme channels are transmitted through the satellite, specific receivers "unlock" (receive as authorised) only those channels which have been subscribed and paid for.

This wondrous system depends upon software which is licensed to DSS by News Datacom International, another of the Rupert Murdoch companies. The software works on a "handshake" basis with special conditional access chips in each receiver. Codes tell the receiver chips which of the 150 channels are "approved" for decoding by each receiver.

The News Datacom technique is very similar in operation to the Videocrypt service in use in New Zealand by Sky and in Australia by Galaxy (both of which also contract with News Datacom). Each receiver contains a pre-programmed conditional access chip and this chip is augmented by a customer provided "smart card" which is inserted into the decoder (receiver) box through a slot provided. The card contains a portion of the electronic circuitry required to convert



$100 REBATE

mailed back to you when you buy any RCA DSS® system

RCA DIGITAL SATELLITE SYSTEM 599.99

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Compact 18" dish

RCA DSS™

Receiver & remote control

175 CHANNELS WITH LASER-LIKE DIGITAL PICTURE AND SOUND

Digital picture and sound. Satellites orbiting the earth send you laserdisc quality pictures 30% sharper than regular tv signals. And you won't believe the sound—better than cds.

50 pay-per-view channels. Why rent videos when you can watch all the latest movies at the punch of a button...films start every half hour.

Watch all your favorite cable networks. What's your choice: Disney, sports networks, VH-1... they're all there, even more than 25 digital music channels.

Get one month free USSB! USSB Entertainment Plus programming with purchase of a DSS system—a $34 value.

Just $45 per month* Model #DS1120RW. Basic installation, see Electronics Sales Associate for complete details **199.99** Deluxe RCA DSS Model #DS2430RW, after mfr's $100 mail-in rebate **799.99**

- **NFL AND NBA SPORTS PACKAGES**
- **5 HBO, 3 CINEMAX & 2 MOVIE CHANNELS**
- **50 PAY-PER-VIEW CHANNELS**
- **OVER 25 DIGITAL MUSIC CHANNELS**

Available in selected stores. *Monthly payment shown available only on Robinsons-May T.O.P. Account, subject to credit approval, payment shown assumes no previous balance and allows for sales tax.

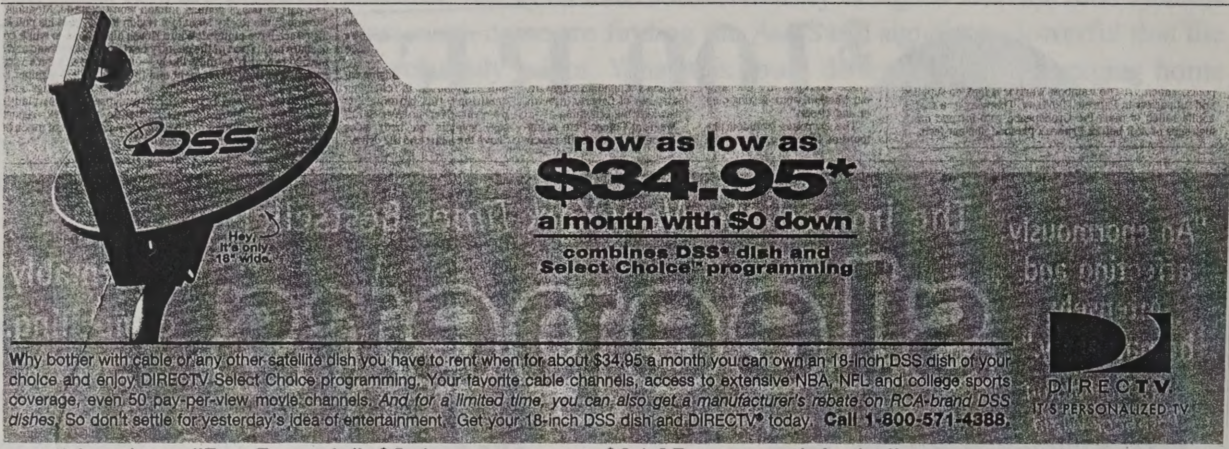
ROBINSONS-MAY

Example of DSS marketing from US department store newspaper advertisement

a specific satellite delivered instruction into a command for the receiver to "unlock" on specific (as instructed) channels. This card has been the target of many "hackers" who would like to duplicate the functions of the card externally thereby gaining access to the DSS programming universe without the formality of paying for the programming.

In Mid-October in Canada a hacker group began selling a "cloned card system" to consumers. The cloned card works by taking an authorised card and replicating it exactly. In this way one customer signs up for some group of DSS programming channels, the card for that customer is duplicated and an unlimited number of new homes (who have not paid for the service) gain access to the same programming channels as the individual who paid for the card initially.

Canadian law does not allow the legal importation and sale of US based DSS programming packages. It is not legal to own a DSS package and receive (US) DSS programming in Canada. In a similar scenario, suppose that the Australian Galaxy service was receivable in New Zealand but Galaxy refused to accept orders for customers here. However, to "get around this" New


DSS
Hey! It's only 18" wide.

now as low as

$34.95*

a month with $0 down

combines DSS® dish and Select Choice™ programming

Why bother with cable or any other satellite dish you have to rent when for about $34.95 a month you can own an 18-inch DSS dish of your choice and enjoy DIRECTV Select Choice programming. Your favorite cable channels, access to extensive NBA, NFL and college sports coverage, even 50 pay-per-view movie channels. *And for a limited time, you can also get a manufacturer's rebate on RCA-brand DSS dishes.* So don't settle for yesterday's idea of entertainment. Get your 18-inch DSS dish and DIRECTV® today. **Call 1-800-571-4388.**

DIRECTV. IT'S PERSONALIZED TV

Nothing down "Box Brownie"; $0 down payment, $34.95 per month including programming package

Zealanders might arrange for purchase of a Galaxy receiving system using a false address in Australia.

In this case the Canadian law, which finds (US) DSS itself illegal, also finds that because DSS is illegal there, nobody who establishes a business to sell DSS "pirate subscription cards" in Canada is violating a Canadian law. It does not take much imagination to visualise these credit-card sized pirate cards crossing the border from Canada into the United States and being sold, quietly without fanfare, to DSS dish owners.

Cloned cards were a threat but not a major one to the growth of DSS programming sales in the US. Then the big break through occurred later in November. A second Canadian group announced they had created a totally independent "pirate card" which no longer depended upon anyone subscribing to any service. Furthermore, rather than being restricted to some group of channels as in the master + clone system (the group of channels the original master card holder subscribed to), the new "stand alone" pirate card gives instant full-time access to all 150 of the DSS programme channels. This includes more than 70 channels of movies; perhaps the largest movie "theatre" in the world. Anyone using such a card with their DSS receiver system not only avoids paying for service, he also gains access to every video channel transmitted by DSS. The cost of the new cards started out at US$600 but was dropping rapidly as we go to press.

How might this apply to the New Zealand and Pacific market?

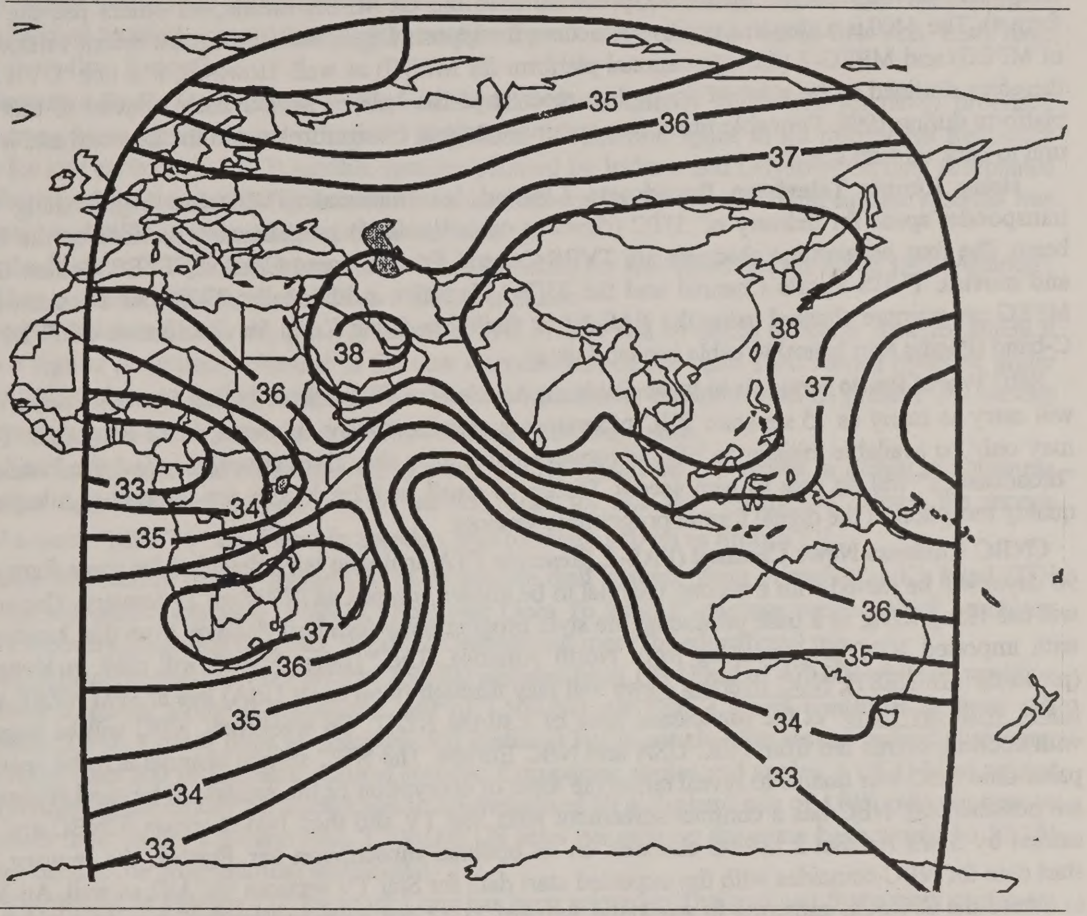
Pirate cards, however illegal they may be under various national laws peculiar to each country, are unfortunately instantly duplicated world-wide. A card developed in Canada to be sold in the United States for "hacking" of the 150 channel DSS service will require very small modification to be sold in New Zealand or Australia to give the user access to, for example, the 40 channel AsiaSat 2 Star TV pay television package. If New Zealand and Australia were the only countries served by AsiaSat 2, the demand for such cards could well be too small to justify the "hackers" reprogramming their US DSS cards for resale here. However, the AsiaSat 2 service area encompasses more than 2/3rds of the people on the face of the earth (all of Asia for a start) and because of the size of this market there is virtually no possibility that entrepreneurial hackers will not appear "out here" with their card technology. And because all of the major systems now use the same basic News Datacom International encryption system, breaking the system in one area is an almost instant guarantee that it will shortly become available in all other regions using the same encryption technology. All of this will bear very close monitoring; we further predict that the Australian Galaxy service will be hit by this "hacker attack" within 90 days or less time.

TECHNOLOGY BYTES

...BITS and BYTES you may have missed in the rush to make a buck ...

December 22, 1995 / Issue 95-10-23

SATELLITE TV and RADIO



Apstar 2R, the replacement satellite for the Long March 2F failure of this past January going to 88.5E as early as March, has a completely new predicted footprint. The satellite was originally intended to serve Asia only on C-band, much like the Apstar 1 bird (138E). As the print shows, 2R will provide very strong signal coverage across all of Australia as well as Africa for the first time with purposely designed spot beam signal enhancement centred on Southern Africa, virtually all of Asia. The coverage is now massive extending from the south-eastern tip of England to eastern Russia. Its Clarke Orbit location is far enough to our west that it will miss New Zealand. The science of sculpturing coverage to follow contours of land masses thereby wasting no signal over unpopulated areas is improving each year.

Satellite encryption system hacking is rapidly becoming a far more significant problem world-wide (see p. 6, this issue). Now the grand daddy of world encrypted programming services, the American AFRTS (American Forces Radio & TV Service), appears to have been "hacked" and an international marketing effort is underway to sell hacked "decoders." One European firm calling itself KEYNET is distributing advertisements via FAX offering for sale "*official Scientific Atlanta B-MAC Decoders*" for use with the world-wide AFRTS service (on Intelsat I177E here in the Pacific) and the European local version known as AFN (American Forces Network). AFN and AFRTS transmit in NTSC format and KEYNET has apparently broken the code to allow uninvited viewing. They are offering AFN decoders (of no use in the Pacific) for US$2,800 and combination AFRTS plus AFN decoders for US$4,400. Or alternately, if a user already possesses a Scientific Atlanta NTSC format B-MAC decoder, a chip set (which the buyer uses to replace present chips in an existing B-MAC unit) for US $2,900. Like all "hacked access" products there are caveats included. There's reads: *"The key sets used in our B-MAC decoders are not official keys issued by AFRTS or AFN. If at any time your decoder is turned off within 1 year of purchase we will send out to you a new chip set free of charge. If the unit is over 1 year old there is a fee of $100 per chip set (all chip sets are sent by DHL or UPS)."*

(The) Discovery Channel, on PAS-2 in B-MAC (PAL format) encryption, has notified its cable television affiliates of plans to discontinue the Pacific region (PAS-2, transponder) analogue service by the end of January, replacing it with a variant of MPEG digital. Cable affiliates have been offered an opportunity to return their present B-MAC IRD units for an exchange or they are allowed to purchase a new General Instrument model DSR-4400 MPEG IRD for US$1,100. This price is very favourable, approximately 30% lower than as priced within the region by GI distributors. The Discovery decision to convert to digital is not a surprise (within the coming year virtually all PAS-2 programmers are expected to do the same thing); the choice of the General Instrument variant of MPEG is a bit odd (only the Filipino Channel on PAS-2 presently uses the GI MPEG format; all others use the Scientific Atlanta format). The 4400 is a step in a positive direction; it supports Digicipher II (the most recent version of the GI variant of MPEG) and MPEG-2 (the international platform for MPEG) as well. However, it is not "DVB compliant" and is therefore destined to be a bit of an orphan receiver as the bulk of MPEG users convert to this particular MPEG platform during 1996. For cable firms, it is one more unique receiver to have in the headend and a therefore difficult unit to back up with spares.

Hong Kong's Television Broadcasts Limited International (TVBI) has begun using PAS-2 Ku band transponder space for delivery of DTC (direct to cable headend) programming services on the China high power beam The four programme channels are TVBS General Entertainment Channel, TVBS Golden Channel of drama and movies, TVBS Sports Channel and the TVBC Newsnet. Additionally, TVBI has contracted for a use of an MPEG programme channel using the PAS-2 link facility in Hong Kong for distribution of TVBI programming on C-band (Pacific Rim beam) to cable headend sites.

BBC World Radio service is to be available on AsiaSat 2 as Global Distribution System. The revolutionary service will carry as many as 15 separate BBC programmes simultaneously, in stereo, in 13 languages. The transmissions may only be available initially to BBC shortwave transmitter sites throughout Asia and the Pacific, although other "broadcasters" will be able to gain access. Dishes as small as 1.2m in size are forecast as adequate for broadcast quality reception of the digital format programme services.

CNBC Business News Channel (PAS-2, presently FTA analogue but scheduled for some form of MPEG within 90 days) will be joined with a second channel to be known, simply, as 'NBC' on 15 January. The new NBC channel will use Hong Kong as a base producing life style programming for all of PacAsia from that location, augmenting it with imported NBC programming from North America. The "Today Show" will play in Hong Kong at 7AM (presently 12n NZST), NBC Evening News will play through (west coast USA) live at 3PM NZST, and the "Tonight Show With Jay Leno" at the unpleasant hour of 3:30AM NZST. On weekends, NBC will be largely programmed with sporting events fed from NBC USA and NBC Europe. The NBC service channel is to be encrypted but at our press-time NBC was unable to reveal either the form of encryption or the satellite to be used (Palapa C1 and PAS-2 are possibilities). NBC has a contract agreement with Star TV and their two channels (CNBC and NBC) are to be carried by Star's AsiaSat 2 MPEG channels on an optional subscription tier. Further, the January 15th announced start date for NBC coincides with the expected start date for Star TV services via AS2 as well. An NBC agent plans to attend the SPRSCS gathering in Auckland January 23-27 and perhaps there will be additional detail at that time (NBC Hong Kong, fax 852-2965-6558).

CNN will launch a (CNN) Financial News Channel on an international basis during 1996, to compete directly with CNBC and ABN here in the Pacific; service begins in USA on December 29th.

Audio and Video Wholesalers (Hamilton 07-847-3414) is importing the ConmStream digital satellite receiver line designed for audio and data applications (such as found with the Optus relays of radio programming services to New Zealand). Promocast (tm) is a low data rate SCPC receiver using an MPEG level of decoding for CD audio quality. The model 101 is a high bandwidth data receiver with decryption (security) features and the 801 is a high speed video plus data service receiver.

Long March launch from China of Echostar DBS satellite for North America could come as early as December 28th. . Successful launch on November 28th of AsiaSat 2 by Long March clearly allowed Chinese to attempt to play catch up for long list of satellites waiting to be launched. A very aggressive turn around from one launch to the next has been announced for 1996 averaging one every 4-6 weeks for the first six months and then accelerating to one every three weeks for last half of the year. AsiaSat 2's success helped a frayed Chinese launch image but the insurance community believes China needs to follow this with a sizeable number of equally successful launches before their concerns for Long March 2F vulnerability are calmed. Insurance premium for AsiaSat 2 amounted to US$50m, more than twice premium cost for Ariane and other western launches. The Chinese government picked up US$20m of the insurance cost themselves to make the AsiaSat 2 launch possible. Following the (successful) launch of the Echostar (named DISH) satellite scheduled for later this month, Long March plans to lift Intelsat 708 in mid-February and then ApStar 2R in March.

European Arianespace successfully launched a pair of geostationary satellites December 6th including new (Indian) Insat 2C which is scheduled to commence operations from 93.5E by February.

Boeing Aircraft plans to begin outfitting commercial aircraft with DBS (direct broadcast satellite) TV receiving antenna systems in January. The systems will allow planes flying domestic routes within most of the North American region to have access to all 150 programme channels from DSS (Direct Satellite Systems) and in turn this will allow internal signal processing equipment within an airliner to route movies, news and entertainment programming to individual receiver screens mounted on seat backs or on larger screen cabin-view sets. Tests have been underway for more than 9 months.

World Administrative Radio Conference, setting world policy for frequency allocations for newly proposed users of radio spectrum, have agreed on providing 300 megahertz of spectrum space in Ka microwave frequency band (20, 29 GHz) for low earth orbit (LEO) satellite systems planned by Iridium and Odyssey. Gaining acceptance of a "world-wide allocation" for the new portable telecommunications service by the new multi-satellite systems was the most hotly debated and difficult issue of the semiannual meeting.

China has ordered a Hughes HS 376 (24 transponder) C-band satellite for scheduled launch late in 1996. Although an in-orbit location has not been announced, 115.5E is a likely candidate.

ATN (Asian Television Network) service, seen on Gorizont G42 (142E) will be linked to North America where it will be included as a regular programme channel in the new Canadian based Ku band DBS service operated under the AlphaStar name. ATN plans to package a special format of programming different from its present G42 service with a blend of programming to reach natives from India, Pakistan, and Bangladesh.

British have placed nation-wide ban on programming from "XXXTV" service. No viewer in Britain, no business may view the satellite delivered service, promote the service, offer for sale the "SmartCard" which the service requires for pay TV access. "XXXTV" originates in Sweden, was formerly known as Erotica TV.

10,000 US schools will receive free of charge US$2,000 satellite dish systems from PrimeStar, a Ku band DTH service there. Schools will participate with dishes in "Primestar Goes To School" package service which combines programming from Discovery, Learning Channel, Weather Channel and more for educational use.

C-band sales in USA have dropped to 1995 level of 350,000 systems from 1994 level of 450,000 while competitive Ku band DSS system is racing along at annualised rate of 1,500,000 per year. C-band consumer systems still command bigger price (2.5 to 3 times price of complete Ku systems) but in return offer almost unlimited viewing opportunities from more than 500 programme channel sources. Comparing apples and apples, a US C-band market of 350,000 per year would equate strictly on market size to an annualised New Zealand sale of 4,018 units per year or 350 systems per month here. In the Ku-band area, 1,500,000 US sales per year on the same basis would be 17,220 units per year. All we need is the programming availability.

1996 edition of "The World of Satellite TV" by Mark Long has been printed in Thailand and first review copies are in hands of editors in region. Book is greatly expanded from earlier version, includes extensive section detailing PacAsian satellites now and in future but contains unusual warning: *"This* (new edition) *is not for available for sale in Australia/New Zealand or the USA."* Statement relates to customised versions to be printed by Peter C. Lacey Services Pty Ltd. in Australia (February scheduled) and a separate version published for North America by Phillips Business Information, Inc. Author Long will be attending and speaking at SPRSCS in Auckland January 23-27th as featured presenter.

DIGITAL TV and RADIO

Final stamp of approval for US HDTV service was given by regulatory agency FCC November 28th, finally clearing way for deployment of high definition service in US. The American ABC network plans to convert all of its existing TV stations to HDTV through a parallel analogue. HDTV (two channel) service "as soon as is practical" and most major US broadcasting groups have similar if not as enthusiastic plans. Still ahead: Major FCC policy decisions on the implementation of new HDTV standard.

Australian Pay TV Services Update

After a brief period of time during which the Australian media debated the likelihood that Foxtel and Optus Cable might merge into a single entity, the attention has shifted to the amount of money being spent to get cable or Galaxy delivered TV into homes there. On a scale of costs against which reasonably experienced cable system builders would compare the cost of actually providing service to each new home, Australian investments are totally over the top. One of the more enlightening (but hardly exceptional nor one off) reports appearing in the Australian press goes like this:

"I decided to subscribe to Foxtel and made an appointment for installation on a Wednesday morning. **Six** Telstra technicians turned up and they crawled under the house and through the ceilings through the day. Unfortunately they were unable to make the coaxial connection from the fibre optic cable that ran along the kerb to the house. They said they would return on Friday, saying cryptically '*We need to dig a pit out in front.*'

"On Friday **eight** Telstra technicians turned up and began digging a hole outside. They were still at it when I returned later in the day although the hole they had dug was full of water. Apparently they had broken (into) a water main.

"The news was they would come back on Sunday. Telecom has changed its name to Telstra but it still seems to cling to the old habit of running up weekend penalty rates.

"On Sunday **ten** Telstra technicians turned up - as usual, two to a van. The connection was finally made and came on line in time for us to watch Greg Norman win the Australian Open.

"The cost of installation, modestly pricing a Telstra technician complete with equipment at $30 per hour and reckoning Sunday at double time, would have been in the region of $8,000. Under its arrangement with Foxtel, Telstra receives $8 a month carriage fee from my $40 monthly payment. On that basis, Telstra could not possibly recover the cost of installing the cable into my home until the year 2079.

"OK, so my case may have been unusual. A Telstra tech on the job told me that he and a mate had connected up a home on Saturday (penalty rates again) '*in a mere four hours.*' At time and a half that would have worked out to about $360 cost. Alas, there is another cost to Telstra; they pay Foxtel $150 for each new subscriber as a 'marketing fee'. So in my case I paid them $40 for the installation and they spent $8,000 to do it. Then they paid Foxtel $150 for the marketing Foxtel did to gain my subscription. Now, for as long as I stay on the cable,. Telstra begins to collect $8 a month from Foxtel for my carriage."

Elsewhere in the world a "team" is **one man** and as TCI and others will tell you, he had better be able to make a minimum of four brand new hook-ups per day or he is history. The Australian Telstra labour force must believe that all of its Christmases have arrived at the same time carrying a banner that reads Foxtel. Alas, there are other signs of problems.

An Australian government inquiry has revealed that Foxtel is also paid $110 for every Galaxy MMDS subscriber which it converts to Foxtel cable; a fee paid by Telstra. Now that Foxtel and Galaxy are close to being the same corporation (still subject to a final ruling by authorities) this practice may not continue.

The Australian government continues to be concerned that somehow, buried deep inside the Telstra telephone accounting department, there is subsidisation of the cable TV rollout by the telephone company's existing telco revenues. Telstra denies this is happening but it will not take very many $8,000 install jobs before Telstra requires subsidies from someplace to keep rolling out cable at its present rate.

Galaxy, the MMDS and Optus B3 delivered DTH service, hit a peak day of 1,100 installations in mid December, continues to average around 650 each working day. Most of the Ku band systems installed are being handled by contract installers who on average are being paid less for a DTH installation than Telstra is spending for each Foxtel cable subscriber. Australian press monitored by CTD generally believes Telstra is pursuing a "**Field of Dreams**" - build it and hope that somebody shows up.

Technical specifications for single high density recording technique DVD (digital video disc) format is emerging as a consensus of contrasting corporate views. There is a surprise: In NTSC areas of world, audio will be in Dolby AC-3 format while in balance of world it will be MPEG audio (the Dolby system will be recorded as an MPEG signal but will have different audio reproduction characteristics). This effectively creates a need in DVD players to respond to discs which are "NTSC" or "PAL-SECAM," something the backers of DVD hoped to avoid. Nine working groups are thrashing out final technical specs and will next move to administrative and copyright matters. The combined consumer electronics industry is still planning a November-December 1996 world-wide launch of DVD format discs and companion players. The DVD disc will be 5"/127mm in diameter (same as audio CDs), have two separate layers each 0.6mm thick. The disc is two-sided with a storage capacity of 4.7 gigabits per side, using RS-PC error correction for flawed bits and an 8-16 modulation system. The system will have an average data transfer rate of 4.69 mbps. The two separate approaches to audio turns out to be a compromise with the movie producers, not a technical decision. To better control world-wide distribution of discs, the movie distributors insisted that there be some subtle technical difference to allow discs pre-released in NTSC (read North America) market to not be usable in the *"rest of the world."* This means, of course, that anyone who wants to acquire an early release of a movie will have to purchase it in NTSC, and own a NTSC player even if they live in a PAL or SECAM portion of the world. With multi-standard TV sets now common, this seems like a rather poor effort to control distribution patterns through artificial means. Biggest hurdle remaining: Settling on an anti-copy protection system to prevent the high quality DVD images from being user transferred to another medium for (illegal) redistribution.

CONSUMER ELECTRONICS

Sony is entering home PC marketplace through a relationship with Intel, a major supplier of CPUs and computer motherboards. Sony brings to the 'marriage' its brand name, disc and CD-ROM drives and experience in the computer game field.

3M, which played a major role in the development of the first practical video tape format as well as being first to develop a marketplace for audio tape in 1947, will shed 5,000 employees and leave the recording tape field totally in 1996. In the current fiscal year, recording tape products contributed US$650m out of a world-wide revenue of US$16B or 3.75%. After restructuring, 5% of 3M employees will be terminated.

Latest Murdoch investment project: a joint venture with electronic TV guide firm Gemstar to create a chip which will allow complete TV programming guides to be downloaded via vertical interval signal to TV sets with constant updating possible through co-operation from TV networks. Concept is variation of one Gemstar is already doing with major US network ABC and equipment makers Hitachi, JVC, Zenith, Goldstar, <Matsushita, Mitsubishi. Philips, Sony and Sharp. Murdoch's MPEG digital TV services via AsiaSat 2 and his planned MPEG service for Europe Sky's network already include on screen guide displays as standard feature and receivers using Star TV programmes on AsiaSat 2 will find full guide is available on screen as a part of the service.

Philips believes that Asian TV viewers perceive colour TV images differently than their European or North American counterparts. And, it has established a "soft red" circuit for products to be sold in Asia with a major sales push underway now in China. Philips believes the "red effect" which predominates TV screens sold elsewhere is not acceptable to Oriental viewers and has adjusted the circuits of its TV receivers for Asia accordingly.

51,000 camcorder users have been surveyed by US Consumer Reports magazine and they found: Panasonic QV-IQ205 and RCA Pro844 were best of lower cost models. And, 12% of all camcorders acquired since 1990 required repair at average cost of US$125.

CABLE/FIBRE/MMDS/PAY TV

Sky TV is suggesting to cable TV operators they will be prepared to offer contracts for cable carriage of their broadcasting services (to cable) during 1996. Sky has maintained for several years that under the *"right circumstances"* cable operators could negotiate use rights for cable system distribution. The new policy is likely to be flexible, allowing cable operators to select one or more of the Sky service channels for cable carriage. The cost per home per month, to the cable operator, has not been announced but there are two benchmarks that might apply in the rate determination negotiations: Motels presently pay a 40% discounted rate (effectively in the $25 per motel room per month range for all 4.5 channels of service) while there are lesser publicised deep discount rates in the region of $13 per month for the larger motel chains that have agreed to accept Sky at all of their locations. On a per channel basis, the $13 rate would come down to under $3 per channel per month if Sky elects to follow this pricing formula with cable.

Cable Ready TV Receivers is becoming an important issue in communities where cable TV service is coming on line. Here is the problem. Cable firms typically have a bandwidth of 50 to 550 MHz whereas standard TV utilises 45-68, 174-230 and 518-806 MHz. TV receivers typically shipped into New Zealand cover these three (band 1, band III and bands 4-5) spectrum segments but not the missing bits (68-174, 230-518). In the cable world, the 68-95 MHz portion is considered part of band 1, 105 to 174 is called "mid-band" while 230 - 300 MHz is called super band. From 300 to 518 would be what cable calls hyperband. Recently Panasonic, Sony and Goldstar began shipping into New Zealand TV sets that routinely have the capacity to tune some or all of the mid-band and super band channels; there are even a few models available that tune hyperband. Manufacturer placed labels on these TV sets often state "Cable Ready," which is a bit of misinformation since a true cable ready TV receiver would be capable of tuning in any TV channel between 50 and 550 MHz with no gaps. Retailers cannot be expected to yet understand these subtle (but important) differences and they will, when questioned, usually rely upon the manufacturer's statement "Cable Ready" rather than believe their sets are not as described. In North America it took nearly two decades of engineering and legal wrangling (a matter that went before the FCC regulatory body at several points) to obtain agreement that "Cable Ready" nomenclature on TV sets should be reserved for those receivers that can, in fact, tune all cable TV channels. What happens if this is not adhered is as follows: Consumers purchase new TV sets under the mistaken belief they will in fact tune all of the available cable channels, only to discover that in fact the TV sets miss some quantity of channels. Consumers usually purchase such receivers to avoid having a cable company supplied set top converter as a replacement for their TV being unable to tune all channels; after buying the new TV, they are still forced to use the set top converter box or forego reception on some group of channels. A true cable ready TV set should be capable of tuning in any TV channel located between 50 and 300 MHz in the standard PAL-B 7 MHz channel "steps," and tune in any channel between 300 and 550 MHz in the standard PAL-G 8 MHz channel steps. This is precisely what cable TV set top converter boxes do and where cable is well established, what TV sets sold do as well. A clear policy within the TV receiver importer group in New Zealand at the outset could avoid years of needless dart throwing on both sides and towards that end a panel discussion dealing with "TV Receiver Requirements For Cable" is scheduled at SPRSCS during the January 215-26 seminar sessions.

Planned MMDS 8 channel system to serve New Caledonia (CTD 9505, p. 20), by New Zealand co-owner of Kiwi Cable UIH International, has collapsed. Service was to include one satellite delivered live news service (alleged to be CNN) plus 7 or 8 taped-in-Paris movie and entertainment channels. UIH has a similar system operating in Tahiti and in fact according to New Caledonia sources it was the Tahiti system's operations which caused New Caledonia authorities to withdraw the permit. The Tahitian operation reportedly is in the PAL format whereas as most everyone knows the French are fiercely loyal to their SECAM format. New Caledonia politicians used the planned use of PAL in New Caledonia as an excuse to cancel the UIH authorisation. The real reason UIH lost it, say our sources, is that a provincial government official with significant government contacts decided he wanted the permit for his own company and he placed pressure on authorities all the way to Paris to get UIH dumped.

Ameritech, investor in Sky Network here and major regional telephone operator in upper midwest of US, is over building existing cable television system serving two Detroit (MI) suburbs. Communities of Fraser and Northville granted Ameritech 15 year franchise; existing system operated by MSO Comcast has 4,2100 subscribers in community of 3,860 homes (a good trick if you can do it).

(American) ABC network has announced plans for "ABC Cable News Network", scheduled for official launch in the first quarter of 1997. Following the ABC announcement, competitor NBC said it has a similar plan but that its "NBC Cable News Channel" was apparently further along than ABC's with an intended start date of mid 1996. A similar world-wide FoxNews network has been suggested by the Murdoch group; there will be no shortage of world-wide news nets and the CNN position in the world may take a beating as a result.

New cable TV company forming in New Zealand? Ex BellSouth NZ and Telecom person Peter Pratt is actively working the cable prospectus "market" at this time.

TERRESTRIAL BROADCASTING

CanWest Global, parent of TV3, is in process of acquiring Western International Communications (WIC) for reported US$471m. Deal gives CanWest largest privately owned television network in Canada (15 TV stations), 11 radio stations and part of CTV national network holdings. In most recent year CanWest had US$32.5m income on $202m revenue while WIC had $7.2m on $290m revenue.

SKY Network plans for extend service into approximately 22,000 home Whangarei is now back on the front burner. Sky has earmarked a number of communities including New Plymouth to receive service in their final stage of terrestrial TV service rollout. Recent announcement and demonstration by Spectrum Cablevision to begin service there may have had some impact on speed with which Sky moves to Whangarei. Sky isn't saying much, only that they will get their four and one half channels of programming into Whangarei via the Horokaka transmission site located north of Auckland but towards the western coast, and then into the Whangarei site at Parahaki. By relaying through Horokaka, several new possibilities arise: Dargaville region will have first service from Sky, an expansive region in north-central Northland stretching from the Brynderwyn ridge range northward through Kaikohe to some sites in the KeriKeri region will receive off air reception.

Summer trans-Tasman VHF signal propagation is off to an unhealthy start with approximately 15% more frequent "events" than during 1994-5 season. Severe interference to band I TV signals along western coast of both islands is now an almost daily event lasting upwards to ten hours per day.

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SPRSCS '96

AUCKLAND, NEW ZEALAND

January 23-27, 1996

- **January 23**: Satellite Antenna Raising Party (Attendees invited to come out anytime after 10AM and observe and learn how satellite dishes "go together"!
- **January 24**: SATELLITE TV BASICS: Highly recommended for "first timers"; skilled seminar lecturers teach you how the satellite TV service works, and why. An excellent foundation course for the next two-days!
- **January 25 & 26**: Parallel (twin) seminar sessions (one for management, one for technical personnel) from 10AM to 5PM. Sessions for all aspects of satellite, Cable TV, MMDS.
- **January 27**: "*Open Public Day.*" Exhibit halls open 10AM to 4PM, massive local publicity inviting interested consumers to attend; special 'From America' Stage Show by satellite programmer Country Music Television.

AND THERE IS MORE: MUCH MORE!!!

- **TECHNICIANS & TESTING ROOM**: A special "laboratory room" established as a gathering spot for those interested in what makes the equipment work; a series of receiver by receiver, part by part performance tests conducted by skilled personnel throughout the entire seminar.
- **UNIVERSITY of AUCKLAND 7.3** metre on-premises "Near Space Monitoring Station" tours. Inspect New Zealand's most respected satellite monitoring facility, immediately adjacent to SPRSCS.
- **NEIGHBOURHOOD CABLE TV SYSTEM TOURS.** Visit the Barryvision Neighbourhood Cable headend facility (4 dishes, 20 channels) in nearby Parnell; loads of ideas, plenty of practical tips.
- **FOUR EXHIBIT STAND ROOMS.** Loaded with the latest in analogue (and digital) satellite and cable TV hardware. Satellite programmer displays.
- **SPACE MEMBERSHIP LOUNGE.** A special room for SPACE Pacific 'Members' to meet and discuss programming access and other important ingredients in our industry's growth. Not a SPACE member? No worry: You can sign up during SPRSCS!

LODGING: With your confirmation of registration you will receive contact information to make lodging arrangements.

MEALS: No meals are included in the SPRSCS Package but lunches will be available on premises to allow you maximum "Exhibit Hall" browsing time.

EXHIBIT HALL HOURS: Posted in the printed programme; open every day January 23 - 27; entry only to show registrants January 23-26.

REGISTRATION: As of 15 November approximately 55% of all seating capacity in the University of Auckland lecture halls is reserved by pre-registrants. Please turn form over to register. Late registrants run the risk of 'Standing Room Only'. Turn over to register today.

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COST
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NON-SPACE MEMBER PERSON 2

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COST
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